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FOUNDED BY WILLIAM HUNTING, F.R.C.V.S., 1888.

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Surgery of the Udder in Dairy Cows.

By R. L. WEST, Minnesota.

I intend to confine my remarks to affections of the teats and their surgical treatment. Surgery of the teat in dairy cows has always been something of a bugbear to me, but I have had more than my share of it to do.

The difficulties of surgery in this region are no doubt recognised by all, but to sum them up: First in the large majority of cases we are called upon to do this work on cows giving milk; in fact, most commonly on those which have just freshened. Hence we have the milk flow to contend with, making healing by first intention difficult, due to contamination of the wound by milk, mechanical interference with the wound during the process of milking, and making it impracticable in most cases to remove the patient to the hospital, making it necessary to leave the after care in the hands of the layman with all that that implies. Second, the ease with which the udder may become infected by the insertion of foreign matter through the teat duct, unless unusual care is exercised; and third, the practical impossibility of maintaining dairy cows in slings, making it difficult to guard against post-operative infection when the animal lies down.

To offset these disadvantages we have a few factors that make for ease and success in operating in this field. First, the accessibility of the parts, under proper restraint; second, the parts being hairless, making pre-operative disinfection and cleansing easy; and third, the fact that this is one of the few places on the animal body where dressings can be secured successfully by means of adhesive tape.

We have three general classes of surgical diseases of the teats to contend with, *i.e.*, traumatisms, fistulæ of the teat duct, and obstructions of the teat duct.

TRAUMATIC WOUNDS.

Traumatic wounds are not usually of much consequence unless the lactiferous duct is involved, but in the rare cases of this kind to which we are called, every effort should be made to obtain healing by first intention. The client has doubtless wrestled for weeks in the past with cows with torn teats, and when he finds a serious-looking cut entirely healed in a few days his satisfaction is something wonderful to behold. And after all, satisfaction on the part of the client is the best fee that a veterinarian can obtain. Of course where the teat is badly lacerated or contused, or both, healing by first intention is impossible, and the client's mind should be prepared for a long period of gymnastic exhibitions at milking time.

In case the milk duct is involved—and we are not often called unless it is—even greater care should be used to obtain primary union. In the first place, always cast the animal. I hog-tie all four legs, even in pregnant animals, and tie the tail out of the way. I do not believe that there is any method of restraint by which proper work can be done in these cases with the animal standing. There is practically no danger of any bad effects from casting, even in cows in an advanced stage of pregnancy, although it is of course always well to prepare the owner's mind for such a contingency.

If the wound is of more than an hour's standing, I remove the entire surface of the wound with a very sharp scalpel. Hæmorrhage usually ceases spontaneously in a few minutes, but if not it should be thoroughly checked. I then cleanse the wound very thoroughly with mild antiseptics. If possible to obtain boiled water, I use physiologic saline solution only. The wound is then painted lightly with tincture of iodine and sutured. I consider it very important to insert a row of buried sutures of fine medium hard chromic gut. For this purpose I use a small No. 20 full-curved needle and needle holders. These sutures are interrupted, and are placed rather deeply through the muscle tissue, as close to the milk duct as possible, but not through the mucous membrane of the duct. The skin may then be united with either a continuous suture of fine silk or by adhesive tape. The latter I consider preferable.

A self-retaining milk tube is then inserted in the duct. And here let me say that in all cases where a milk tube must be left in a teat for any length of time, I always use one with openings throughout the entire length of the tube, the lowest being just above the self-retaining enlargement. This tube should be left in place for six or seven days, only removing it for a few minutes once daily to cleanse and sterilise it by boiling. This, in my opinion, is very important, for if the tube is removed for any length of time, the milk which accumulates in the teat will surely work into the wound and prevent its healing properly, usually resulting in a milk fistula. In instructing the client as to the after care, too much emphasis can not be placed upon the proper cleansing of the milk tube when removing and replacing it. If this handling of the tube by the layman could be eliminated, it is certain in my mind that a much higher percentage of complete recoveries would

result; but I have not found it practicable in the ordinary case to visit the patient daily for this purpose. The client invariably thinks that you are trying to pad his account, just driving out to wash that little tube and replace it, which he thinks that he could just as well do himself; yet I will wager that there is not one layman in ten who, in spite of all cautioning, will resterilise the tube in case it should touch the cow's foot, or even be accidentally kicked from his hand on to the nice clean bedding while he is trying to insert it in the teat.

Fistula of the Teat Duct.

Milk fistulæ of the teat may be congenital, but are more often the result of improper healing of traumatic or operative wounds. Their treatment should, if possible, be delayed until the end of the lactation period. If the opening is small it may sometimes be closed by cauterising the opening slightly by means of the actual cautery; but I believe that an operation consisting of removing a piece of tissue, including the opening of the fistula, and suturing, is more certain in its results and hence more satisfactory. I first insert a milk tube or probe into the milk duct through the natural opening, making an elliptical incision, including the opening of the fistula, down through all the tissues to the milk duct, wait for the hæmorrhage to cease, remove all clotted blood and close the wound as before described in the treatment of traumatic wounds. In these cases also, even if the cow is practically dry, I insert a milk tube, as there is nearly always enough milk secreted by the quarter to interfere seriously with healing if means are not made for its ready escape through the natural teat opening. In these cases it is usually unnecessary to remove the tube for cleansing so often, and when the udder is not secreting so profusely it seems to be more resistant to infection for some reason. At any rate we seldom see an infected quarter from operating when the cow is practically dry.

Obstructions of the Teat Duct.

Obstructions of the teat duct, causing partial or complete interference with the milk flow, are perhaps the most serious and difficult conditions affecting these parts that we have to treat surgically. These obstructions may be of several kinds, viz., congenital atresia, papillomatous tumours, usually with a constricted pedicle or neck, accumulation of a varying amount of fibrous or epithelial tissue in some part of the milk duct, and true stenosis or narrowing of the lumen of the milk duct.

Congenital atresia is not usually noticed until the heifer comes in milk with her first calf. It is usually easily corrected by making an X-shaped incision over the end of the teat. I have fortunately not met with those cases described in literature where a portion of the milk duct is lacking.

Probably the most common obstructions are the tumorous growths of some kind which may occur anywhere along the course of the milk duct. They may be felt through the teat wall as more or less hard, firm bodies of varying size, and when a milk tube is introduced into the teat their point of attachment can usually be ascertained. After many attempts with various instruments I have given up trying to remove these tumours through the natural opening of the teat. After treating traumatic wounds successfully in that region, I was encouraged to attempt their removal through an operative opening on the side of the teat, and I have since followed that procedure with much better success. The technique in these cases is very similar to that used in correcting teat fistulæ. The teat tube or probe is first inserted and an attempt made to locate the point of attachment of the obstruction. A rather free incision is then made clear through into the teat tube, endeavouring to cut through just to one side of the base of the tumour. The tumour is then removed with scissors or scalpel, the base of the tumour just touched with the fine point of the actual cautery (this stops the hæmorrhage, and since I have been using it I seem to have less trouble with recurrence of the affection) and the parts sutured as described before and similar after care given. The important points in this operation, in my opinion, aside from the usual precautions as to asepsis, etc., are, first, the use of the actual cautery, and second, the location of the incision, close to the base of the tumour, as I believe that in this way the most complete incision of the tumour can be accomplished with the least sacrifice of the epithelial lining of the milk duct.

Those conditions in which there is a proliferation of fibrous or connective tissues in the duct are more difficult to treat, especially if a large portion of the length of the duct is involved. Use of the teat slitter and dilators give temporary relief, but in my hands the relief is only temporary. Hence in cattle of ordinary value I usually open the teat well, leave a milk tube, and advise drying of the quarter as soon as possible and disposing of the animal at the end of the lactation period. I believe that amputation of the teat in these cases is really the rational procedure, but I have not practised it. I have tried operating in a manner similar to that used in the case of tumorous obstructions, but it seems difficult to dissect away the excessive tissue without destroying so much of the lining mucous membrane that stenosis of the duct results. However, in the case of a valuable animal, where the proliferation does not seem excessive, I believe that such an operation is indicated, as in my opinion it gives the only chance of permanent and complete recovery.

Complications.

Complications in all these operations are similar. The one most commonly met with and the most to be feared is, of course, infection and possible loss of the quarter, which may even result in a fatal case of mammitis. This infection is practically always occasioned by the use of an infected milk tube. Milk fistulæ, if they occur following an operative opening of the duct, may be corrected at the end of the lactation period. Aside from these complications, care should be used in giving a prognosis, as recurrence of the trouble or stenosis of the duct may supervene.

While polyvalent bacterins should not in any way replace every precaution in regard to asepsis, both during the operation and in the after care, still I believe that their use at the time of operation, or, in the case of traumatic wounds, when they are first treated, is of material benefit in preventing post-operative infection of the udder.

This in a general way has been my method of handling these cases. Teat troubles, especially in valuable dairy cows, are exceedingly trying to the dairyman and are often the cause of severe monetary losses; so if we can work out more satisfactory methods of handling them, not only are we performing a real service, but I think that there are no fees more cheerfully paid than those for work of that kind where the actual benefit from the operation is so plainly apparent.

Jrnl. Am. Vet. Med. Assn.

Our Future and the Profession.*

A Student View.

By W. Brown, R.V.C., London.

Mr. Chairman and Gentlemen,

A local authority on humour, representing, incidentally, one of the two subtle hands charged with the moulding of the final year student, recently designated the finished graduated article as a licensed practical joker. That the subject of the latter's jokes is not necessarily the long-suffering British public was well evidenced when an august assembly at Chester was invited to listen to an address on the future of the profession by a weighty member, who thereupon made it his business to prove that the profession has no future.

The slight distinction in the title of my paper from that presented to the National Veterinary Medical Association by Mr. Gray bears some significance. The consideration of their future would probably have been a matter of no great urgency for any one of the impressive personalities congregated on Deeside for the dual delight of accepting ducal hospitality and of dipping into the future in so far as it affected other folks.

For us, students standing on the brink of those proverbially difficult waters which run between the Diploma diving board and a sound footing upon that lucrative strand where lie the livings that render possible joy trips to Chester—for us, I say, the question of the future of the profession is of infinitely greater moment.

Consequently, I make no apology for introducing it here. The matter is pre-eminently our business, and it is neither reasonable nor wise of us to acquiesce in the delegation of the discussion of what appears to me, at least, to be essentially a students' problem to gentlemen to whose disinterested deliberations necessity applies no spur.

Popular opinion bestows upon the veterinary surgeon a variety of strikingly unprofessional characteristics: an entire lack of *esprit de corps*, a profound disbelief in the *bona-fides* of anyone who essays to promote his interests, and an abysmally rooted conviction that his chosen calling was pre-ordained to occupy the bottom rung of the professional ladder.

We refuse to subscribe to any of these features as delineating the present day practitioner, and I make bold to say that all these are anathema to the modern student.

Platitudes about our being proud of our profession are out of place in a student gathering—the measure of one's legitimate pride in a thing is that of one's own contribution—and such success as has been achieved in promoting the interest of the veterinary scientist or practitioner is the work of other hands than ours. But in due time we shall be called upon to take our place, and it is not too early for us to prepare to occupy it worthily. We cannot for the good of our calling too soon equip ourselves with an outlook that is broader than the personal, with a knowledge of the problems confronting the profession, and with an enthusiasm which shall ensure that element of individual concern without which all our collective effort is futile.

Surely the darkest clouds on our professional horizon to-day have arisen from the deplorable fact that, as students, its now influential devotees failed to awaken within themselves that spirit which resolves at all hazards neither to let one's professional brethren down, nor, either through false pride or lack of diligence in stewardship, to fail in grasping any opportunity for furthering the interests of the profession in preference, if need be, to one's own, and never realised that the very diminutiveness of an essential body may, if only the members of that body be united, be its greatest source of strength.

I would stress that word "essential." It is not easy for me to comprehend how any veterinary seer, with his ears filled, maybe, with the hum of his own motor, can see no other way of salvation from the red ruin of horse reduction than a routing about amongst fishes and bees. Gentlemen, we present these pursuits—truly delightful hobbies both—to a disgruntled essayist. Why, the passage of time merely serves to reveal new points of contact between our science and the vital service of humanity. I have previously stressed the fact that we, at least, have to take this matter seriously.

No questions present themselves to us as students with greater intensity or urgency than the following: "What has our chosen profession to offer us? And, what provision does the training department of our profession make to enable us to take advantage of the openings afforded?"

I propose to proceed with the consideration of both these queries. The power of adaptation is the primary essential of survival, and, by pressing hard on the heels of opportunity, I contend that so far from any reduction in scope confronting the man who takes up veterinary work, his promised sphere of activities presents broader horizons than were to be revealed even so recently as one decade since. As

* Presented to the R.V.C. (London) V.M.A.

a matter of fact, the vista has entirely changed, the circumscribed boundaries of the strictly clinical territory which comprised the only field of action open to the student, with scarcely any exceptions, having yielded to disclose avenues of employment demanding much man power, and that of a quality totally unmenaced by unqualified competition.

The old limited conception of our opportunities is still too recent in our minds to render negligible the danger that the present-day student will fail to take due cognisance of the possibilities open to him. Many amongst us never give a thought to the desirability of becoming more than sufficiently proficient in the everyday doings of practice to prevent our making ourselves conspicuous by our inability.

To my mind, the student who takes the hereditary narrow view that his mission is solely to cure disease, and that to encourage the study of disease prevention is to invite disaster from the bank-book view point, is making a profound mistake. The fact that there are those amongst you who disagree with me upon this question illustrates the only real menace to the future of the profession. For, whether you like it or not, preventive medicine has entered the realms of veterinary practice to remain, and the student of to-day is called upon to accept the added responsibility and dignity of a calling in which the value of his services is rapidly rising from the purely economic to the medically indispensable plane in human affairs.

With the bestowal of increased responsibility comes the demand for wider knowledge, and here I fear that the gentlemen who desire to see their profession for ever tied to the apron strings of curative treatment would find themselves badly left, if they had their way. Fortunately, they are not to be allowed to have it—against their will the speculum of an expanding college course is widening the resistant boundaries of their understanding, the while doubtless undesired prophylactic pabulum is being thrust into them in an unappreciated endeavour to save them from themselves. Most certainly such will be confined to the ranks hereafter of the struggling small practitioner, but without some such saving process the modern client would have little use for the "curative treatment is good enough for me" type of veterinarian.

The problem of the satisfactory absorption—satisfactory in the financial sense—of the product of our veterinary schools presents itself to me in this light. Will the increased number of avenues of occupation open to the veterinary graduate in consequence of the governmental adoption of the policy of disease prevention, of the increasing demand for veterinary co-operation in the eradication of the diseases of animals communicable to man, and of the opening up of the important fields of zootechny—will the absorption of men consequent upon these processes be sufficient to ensure reasonably lucrative posts for those still, and for many years, the great majority, who will be called upon to fill the rôle of clinician in the field?

In regard to the latter we cannot speak from the personally unconcerned standpoint of the eminent authority who recently expressed fear of the policy of raising the entrance standard of examination on the ground that it would soon cause such a shortage of practitioners that the needs of the livestock of the country would thereby be inadequately met. There is another factor here, in addition to the interests of the livestock, which seems to have been overlooked. The greater number of us will represent that other factor, the clinician, whose only remedy for the falling economic value of his patients lies in their increasing number per practitioner. Any attempt to secure adequate remuneration concurrently with declining economic value constitutes just that opportunity which the unregistered are only waiting to seize, and under present conditions the one essential of survival is the elimination of that competition for patients amongst practitioners of which the authority mentioned appears blissfully unaware.

An alternative is to admit the unqualified to your register, following the bold example of the dental fraternity, thereby repeating the procedure followed in 1881, with the proviso that the Act should be enforced, ensuring legislation against all subsequent unlicensed practice, and hold the matter of remuneration, within the limits of economic value, largely within your own hands in consequence.

Some standard of competence should be set by examination in general knowledge, medicine, and surgery, for your newly recognised members. After their admission your superior training will tell its own tale in no greater and no less a degree than it did previously.

It is an interesting experiment, and I am personally inclined towards its adoption by our own profession. I shall, doubtless, hear further opinions as to the wisdom of this procedure before the close of the meeting.

But assuming, *pro tem.*, that we are to be assailed by competition from without as well as from within, it is surely unconvincing with a diminishing equine demand to talk to clinicians having their living to earn about the danger of a numerical failure to do justice to a survivor of inferior value if you dare to impose conditions of entry which should be common to every profession.

Apparently it can be part of one's duty to science to narrow the circle of professional practice by a wholly justifiable devotion to prophylaxis, and yet to hamper the co-incident reduction in personnel necessitated thereby. It is just this narrowing of the therapeutic circle that should make anyone who has at heart the future well-being of students eager to leave no stone unturned to encourage them to follow those branches of their calling in which there is indubitable prospect of expansion, the while definitely warning intending clinicians of the limitations which will be increasingly attendant upon ordinary practice. Such a one should know, as no one else, the trend of modern medicine towards governmental dependence for the barely self-supporting clinician, together with the establishment of a corps of highly-trained research workers. The first process had to be encouraged in human practice in consequence of competition,

despite the vital and superior sentimental value of the patients. In accepting the panel system, which stood first in the minds of medical men—the interests of the patient or their own ?

Our position compares unfavourably with theirs—with our legacy of tradition from the type of man who feared to ask a groom for a bucket of water in case he should be told to fetch it himself. The doctor's charges are paid generally without protest, and yet the need for action on an organised basis in wholesale co-operation with the State presented itself.

It is of quite equal importance to us that overlapping should be prevented, but given loyalty amongst his fellows and a fair chance, free from external interference, I beg to leave the clinician to settle the matter for himself. With such a lesson in organisation as is being presented to him by the National he should be quite capable of accomplishing the task without legislative support. But if anyone present has any pet panel system for domestic animals, I think we can assure him of an attentive hearing.

On the other hand, I do consider that the prophylactic side of the profession requires not only Governmental support, but control. The prevention of many of our animal scourges demands legislative interference at the present time, and to secure co-ordination of effort, and the standardisation and freedom from abuse in production and distribution of the biological products utilised in preventive medicine, one would wish to see Governmental control of all our research institutions. We must realise that only a State-aided and controlled institution can be relied upon, or can afford, to adopt the only attitude justifiable in dealing with the diseases of animals—that of disinterested and wholehearted enthusiasm for their eradication ; the zeal of the clinician in regard to these matters must of necessity be tempered by the instinct of self-preservation.

We must, therefore, try to qualify ourselves for entrance into that charmed circle of such an inevitable research officialism as I have visualised. It will hold the rewards of the future. If that be denied us, let us strain every nerve to bring within our reach those Board of Agriculture appointments for which many a struggling practitioner has cause to be thankful. If our lot is cast amongst the veterinary rankers, let it not be in the rank sense of the term. All the profession asks of us is to avoid bounderism like the plague, to refuse to undercut our neighbours, to regard the latter as co-operators rather than as opponents, and to push our bit in the efforts which our organisation as clinicians, the " National," is making to improve the lot of the general practitioner, and his position in the social scale.

The practitioner has, for instance, to be encouraged to take the view that if the utilisation of his client's front entrance is justified where the doctor is concerned, it is not too good for him.

Now a word as to the facilities offered by the profession for the attainment of these various qualifications. In my opinion, whether it be for research, for Colonial or army appointments, for Government inspection posts, or for clinical work, training should be centred in the existing veterinary institutions. We do not want to see it transferred to seats of learning beyond the reach of the pocket of the veterinary surgeon who may wish his son to follow in his footsteps. Our schools have always been badly let down in the matter of Government aid, and universities are taking advantage of that fact to emphasise their superior potential resources. Do not suppose that any aristocratic 'varsity men are out after your jobs as practitioners—their desire is to secure the plums of research, delegating the clinical dry-bones to the product of the impoverished Veterinary College.

State-supported *bona-fide* veterinary colleges, capable of providing a training adequate to bring any position which the profession has to offer within reach of its students, are the hereditary right of the veterinary surgeon's son.

In regard to the securing of those additional qualifications which are the desirable possession of the applicant for appointments under Government, it is surely high time that regular post-graduate courses should be established in not one but every veterinary school. To this end one would suggest the addition of an optional year to the college course. Probably the ideal way out would be to so augment or transform the curriculum that the Diploma should, as doubtless its originators intended, throw open the door to the securing of any position connected with veterinary science. For this purpose the raising of the educational entrance examination in such a direction that the present first year's course could be largely dispensed with would enable this all-in Diploma to be secured without a five-year course.

There are also short-comings in regard to the production of the successful clinician. Most of our colleges, and one in particular, are in the wrong place. Our increasing reliance upon animals other than the horse renders it imperative that, in our case at least, a transference should be effected to some centre of agricultural and educational activity, such as Reading or Cambridge, where the study of these animals would at least be practicable. There, moreover, would be rendered possible the practical study of the science of breeding with a view to the supersession of scrub stock by animals of enhanced value—a process in which the veterinarian can play an important part to his material advantage, thereby counteracting the present disastrous deterioration in the economic value of his patient with its consequently diminishing fee-producing power.

Turning for a moment to the question of graduate selection, the present mode of relying solely on annual examinations appears to me to present certain grave defects, not so frequently in the rejection of those qualified to succeed as in the passing of the unfit. Far be it from me to recommend any increase in the severity of those annual abominations, but one feels that it is very easy under the present method of haphazard questioning to do, perhaps, less than

justice to the studious victim who fails to possess that vital examination temperament, and, more frequently, more than justice to the lucky cramster who happens to be the recipient of a fortunate crop of queries. Maybe some place in the total might be taken by scrupulously earned monthly marks. Such a course would, at all events, produce a surprising acceleration in knowledge absorption during the earlier months of the scholastic year.

In conclusion, I would stress the fact that attention to professional politics plays a more prominent rôle than we may imagine in the attainment of opportunity. Let the student make up his mind that, on graduation, he will shoulder the responsibility of membership by interesting himself in them, selecting to represent him only those leaders who have given proof of disinterested zeal for his welfare.

Gentlemen, I have, perhaps presumptuously, led authority to the water, in the sure and certain knowledge of a glorious failure to make it drink. I look to you with greater hopefulness. Your profession and your position in it will be what you determine in your student days to make it. You may, if you so desire, be content to conform to that ancient description of people pouring substances of which they know little into bodies of which they know less. You may lie down with that professional lethargy which has become a bye-word in connection with our calling to collect the cash obtainable by circumscribed routine without a thought beyond an uninspired existence in a fool's paradise of falsely designated self-help, willingly allocating the rest of the veterinary fraternity to the tender mercies of the devil. There you may remain—ready victims to each and every competitive influence that seeks to encroach upon your dog-in-the-manger preserves.

Alternatively, you may, here and now, commence the development of a consciousness that you are members of a profession that is yearly becoming of increasingly vital import to mankind, and, confident in that knowledge, seek to perfect your equipment in its service, determining, in the spirit of true fraternity, to instil into your professional brethren your belief in the reality of a veterinary future, and your ideas as to the true way of progress.

Anthrax from Shaving-Brushes.

In connection with a death from anthrax which occurred in Coonoor, investigations conducted by the Deputy Sanitary Commissioner, Madras, showed that the deceased, who was a general merchant at Coonoor, contracted the disease and died of it by using one of a consignment of shaving-brushes supposed to be of Japanese manufacture, which he purchased from London and imported into India. A number of brushes (forty-six), forming part of this particular consignment, was traced to the Kolar Gold Fields. The brushes were taken possession of by the Health Department and a bacteriological examination of them at the Sanitary Board and the Mining Board laboratories revealed anthrax bacilli.—*Hospital.*

The Veterinary Record.

17th December, 1921.

WHOLE-TIME SALARIES.

Many of our readers will agree whole-heartedly with most of the remarks made by Mr. Hobday in the course of his paper read before the Mid-West and South Wales Division, and published in last week's issue. We quite agree with Mr. Hobday that money is not everything, but that an adequate income is of vital necessity to the maintenance of a correct professional status. This evil of inadequate remuneration is, unfortunately, not a product of the war. Prior to 1914 whole-time appointments were advertised, and accepted, at the princely salary of £150 per annum, both for inspectors and for teachers in veterinary schools. To-day similar posts are offered at about double that figure, so that based upon the average increase in salaries in general, those offered to veterinary inspectors are not disproportionate. The grievance of our members is, therefore, an old-standing one, and as such its amelioration is beset by greater difficulties than may appear at first sight.

The "National" realised some time ago "the futility of its members becoming genteel slaves," and, as a result, appointed a Committee to investigate and report upon the salaries paid to whole-time veterinary surgeons. The terms of reference were wide and the task no mean one.

It has been openly stated that the Salaries Committee has done nothing to justify its existence. This sweeping inaccurate assertion simply tends to render the task of the committee even more difficult by discrediting its good intention before there has been an opportunity for a report to be presented to the Association.

It must be admitted that the situation is of a delicate nature, and if real benefit is to accrue to the profession, is one that requires very careful handling. It is no easy matter, particularly in face of the present outcry against the spending of public moneys and the increase in salary of public officials, to convince Local Authorities that a hundred per cent. increase on post-war salaries is inadequate, and that despite the fact that there was no shortage of applicants, the proportionate pre-war salaries were insufficient.

It would be perfectly easy for the "National" to advise that its members must not apply for posts offering less than a certain remuneration, and no doubt such an action would call forth volumes of applause from a certain section. But in effect what would happen? It is conceivable that there might be members of the profession who are not members of the "National," and who would in these difficult times be prepared to accept such posts at a lower salary than that recommended by the Association. There might indeed be members of the Association who would feel disposed so to act. If the critics stigmatise this as a sign of weakness, as no doubt they will, let us frankly admit that it is weakness due to lack of support, in many instances, by the very men who are so ready to rail. Perhaps by virtue of this weakness the "National" may be induced to formulate a scale of remuneration for whole-time members of the profession which will be equitable alike to those members and to the taxpayers of the country. Such a scale, while it may fail to satisfy the more extreme of our ranks, will undoubtedly make for satisfaction in the long run, and as a result of its fairness will, we hope, tend to increase the number of whole-time appointments rather than risk a reduction, as a result of rash, impetuous action.

Election of Council R.C.V.S., June, 1922.

The foreign voting papers for the next election of Council will be issued early in January. The following members of Council retire by rotation:—

Major J. Abson, Sheffield.
H. Sumner, Esq., Liverpool.
Major-General L. J. Blenkinsop, London.
G. A. Banham, Esq., Cambridge.
Lt.-Col. J. W. Brittlebank, Manchester.
J. C. Coleman, Esq., Swindon.
P. J. Howard, Esq., Co. Clare.

The death of Col. A. W. Lawson will not create an additional vacancy, as his term of office would have expired in June next.

Nominations for election should be sent to the Secretary at 10 Red Lion Square, W.C., as soon as possible, in order that the names may be included in the foreign voting papers.

Abstracts and Reviews.

The Present State of our Knowledge on the Vitamines.

In the year 1887 BUNGE, in the first edition of his well-known Handbook on Physiological and Pathological Chemistry, after making reference to LUNIN'S researches, wrote the following words, which are extremely significant in the light of our recently acquired knowledge concerning the science of nutrition: "Upon milk alone mice can sustain life. If, however, one combines all the constituent parts of the milk, which according to present physiological conceptions are requisite for body maintenance, then the animals quickly succumb on such a diet. Does the milk contain besides protein, fat, and carbohydrates, still other organic substances which are likewise absolutely essential for the maintenance of life? It would be profitable to prosecute further researches in this connection."

BUNGE'S portentous appeal passed unheeded at the time and for many years afterwards; it contained, however, in a nutshell, lightly visualised, the whole of the modern problem of the vitamines.

In the year 1906 HOPKINS demonstrated that no animal can exist for long on a mixture of protein, fat, and carbohydrate, together with the necessary inorganic material, and thus showed the need of still further substances.

When one comes to consider that the animal body itself is composed of numerous organic substances, it is comprehensible why animals under natural circumstances do not obtain their nourishment by feeding upon those which are chemically pure, but upon either plant or animal material.

These problems, in so far as they concerned the physiology of nutrition, were elucidated by the following researches: OSBORNE and MENDEL in a series of prolonged experiments found that they could never maintain rats for long in good health when they fed these animals with all the organic materials deemed to be necessary for nutrition in their purest form, together with the requisite salts. HOPKINS himself showed that he could not nourish rats normally for long upon carefully purified organic and inorganic materials that were sufficient to satisfy the matter and energy requirements of the body; this abnormal state of affairs was immediately rectified by incorporating daily with the artificial food an extraordinarily small quantity of milk. Again STEPP'S work showed that animals fed on an otherwise sufficient diet which had been carefully freed from the so-called lipoids by means of alcohol and ether succumbed, but when the alcohol-ether extract was added to the diet they remained healthy.

Still greater influence was brought to bear upon the new conception of the science of nutrition (in the sense of the necessity of substances for which the non-committal name "accessory food substances" had been suggested by HOPKINS) by the experience of pathology. EIJKMANN discovered that by feeding fowls on polished rice avian polyneuritis was set up, and he recognised the relationship between this experimentally-produced condition and beri-beri, the disease of man, which likewise arose through an unbalanced diet of polished rice.

AXEL HOLZ and FRÖHLIEB found that by feeding guinea-pigs on an unbalanced diet of wheat grains

separated from their bran a disease was produced very similar to human scurvy and especially the scurvy of children (MÖLLER-BORLOW'S disease).

FUNK proceeded to isolate bodies that were chemically well-defined from the material, the absence of which caused beri-beri, experimental beri-beri, and scurvy, and the addition of which, on the other hand, prevented the onset of this disease, by means of the recently introduced methods of chemical analysis. He thus succeeded in obtaining substances which he could analyse and which had an alkaloid-like character. He even designated a crude formula for them, and one of the substances isolated was found capable of effecting recovery in beri-beri even when employed in extraordinarily small quantities. This substance he named "vitamine," and he considered it to be of importance to life, designating diseases of the beri-beri, scurvy, pellagra, and rickets type as "avitaminoses." Although only the beri-beri vitamine had been adequately investigated by him, he nevertheless differentiated according to the corresponding diseases a beri-beri, a pellagra, and a rickets vitamine, as well as a so-called growth vitamine.

The vitamine conception became popular through FUNK'S researches. The far-reaching results obtained by FUNK had contributed not a little towards a solution of the problem, for his so-called vitamines stood in close relation to striking morbid manifestations, as well as to normal nutrition, to growth, and the internal secretions. Again, in much the same manner in recent years the practical aspect of the vitamine hypothesis as studied and reported upon by FUNK has been exploited vigorously, whereas in theoretical respects, that is to say, in obtaining sufficient knowledge of the precise chemical nature of the substances and the manner and way in which they work, we have made little further progress.

From a practical point of view it would now seem to be established that, first, a quantitatively sufficient amount of chemically pure food stuffs, and secondly, a quantitatively sufficient amount of natural food materials, under certain conditions of production and preservation, may be qualitatively insufficient, with the result that maintenance and growth may be upset.

The example that has been longest known is that of nutrition, which is qualitatively deficient, due to the absence of single inorganic substances. Much more recent is the information now available with regard to qualitatively deficient nutrition due to inferior value of the proteins. We now know that certain so-called "building-stones" in the structure of the protein molecule are essential for the human and animal body, and that there are proteins in which one or other of these "building-stones" is absent. When, by way of example, proteins are given in which the tryptophane or the lysine group is absent, as is the case in some vegetable proteins, then no matter how complete the foodstuff is quantitatively in protein and in energy, it is nevertheless deficient.

The "accessory food substances," or so-called "vitamines," are not identical with the known protein "building-stones" of the amino-acid class, the lack of some of which makes a diet deficient. This has been proved by the following facts. First, the addition of certain of the known "building-stones" in the course of experimental tests does not make the foodstuff in question complete. Secondly, the total amounts of the substances that need be added are quantitatively much smaller when it comes to a question of the accessory food substances than when it is a case of a protein-inferior diet, lacking in the requisite protein "building-stones."

As the outcome of extensive feeding experiments performed especially by American and British workers, we have now succeeded in differentiating three accessory factors in nutrition: (1) The anti-neuritic or anti-beri-beri factor, which is identical with the water-soluble B growth factor of American authors; (2) the fat-soluble A growth or anti-rachitic factor; and (3) the anti-scorbutic factor.

The anti-neuritic or anti-beri-beri factor, first designated by MCCOLLUM and DAVIES as the water-soluble B growth factor, occurs principally in the seed of plants and eggs of animals. Yeast cells, together with extract of yeast, contain this factor in abundance, as do also liver and brain cells, while meat flesh contains but little of it. In leguminous plants this factor is contained in the seed, but in the cereals it is found in the embryo and in the peripheral layer of the seed. It is also present in milk, and can only be separated from the milk sugar by very careful crystallisation.

The fat-soluble A growth or anti-rachitic factor is necessary in order to promote growth and prevent the onset of rickets in young animals. It is, however, also necessary in order to maintain adults in a state of well-being. The factor occurs particularly in certain animal fats and in green leaves. The following foods are rich in it: Cream, butter, ox fat, cod liver oil, and yolk of egg. On the other hand, it only occurs in negligible amount in bacon, lard, and in vegetable oils. Green vegetables contain the fat-soluble factor, but, on the other hand, it is absent from "roots."

The anti-scorbutic factor is necessary in order to prevent scurvy and other diseases which are recognised as belonging to the scurvy type. It is found in fresh vegetable tissues and, in smaller amount, in fresh animal tissues. It is particularly abundant in cabbages, turnips and beets, lettuce, water-cresses, lemons, oranges, raspberries, and tomatoes. In potatoes this factor is to be found only in small quantities; and this is an important point, as potatoes are usually eaten by human beings in large quantities. Milk and meat contain certain small amounts of the factor. It is destroyed when the fresh material containing it is submitted to the action of heat, desiccation, and other methods of preservation. All dried foodstuffs are deficient as regards this factor. Canned vegetables and canned meat are likewise of inferior value, whilst with canned fruit the acids present may contribute towards preserving the anti-scorbutic factor.

It is not without interest to know which of the ordinary (human) foodstuffs contain all three factors. These foods would include: Lean meat, liver, raw whole cow's milk, sprouting legumes and cereals, and fresh cabbage. When a foodstuff is very rich with reference to one accessory factor, it may be completely deficient in the others. As far as human milk is concerned, its value as a qualitatively sufficient food depends upon the nutrition of the mother. The anti-rachitic fat soluble substance A is built up neither in the woman nor in the cow; it appears to originate from the green leaves of plants, and thus only animals fed on green fodder furnish milk and butter that are rich in the anti-rachitic factor. Hence, if the human mother does not partake of such milk and butter, her own milk will in consequence be deficient.

The applications to be made in practice from the preceding statements are obvious. In order that one may be able to estimate the value of a diet correctly, it is necessary to take into account the several facts that are already known, and which are detailed at length; for example, in HOFMEISTER'S comprehensive treatise on qualitatively deficient nutrition in the physiological reports for the year 1918, and in the "Report on the Present Knowledge concerning Accessory Food Factors (Vitamines)," London, 1919.

There is to hand at present such abundant experience on this subject that an endeavour should be made to arrive at a theoretical explanation of the phenomena, and this task would be very considerably lightened if one possessed some precise knowledge on the chemical nature of the substances which have been designated as accessory food factors, vitamines, or nutramines according to ABDERHALDEN. But we are far removed from this point as yet.

The group of substances for which we have most nearly reached a chemical explanation is in particular that of the anti-neuritic or water-soluble factor B, which prevents beri-beri. This group has recently been submitted to an accurate chemical investigation by FRANZ HOFMEISTER, who, in collaboration with TANAKA, succeeded in isolating an alkaloidal body which for the present is named *oridin*. This oridin is isomeric with betain and valin, and according to its chemical characteristics it stands in relationship to the pyridine and piperidine group. Judged by its appearance and properties, the investigators had reason to regard this body as the anti-neuritic principle sought for, but in the form in which they ultimately succeeded in obtaining the preparation, analytically quite pure, it proved to be inefficacious in animal experiments. This result, it seemed to HOFMEISTER, might be due to either of two possibilities, viz., either the oridin which has not been purified completely by analytical methods contains the anti-neuritic substance as an admixture, or the anti-neuridin, which is identical with oridin, loses its efficacy in the last stages of the purification process. The last hypothesis is also sustained by WILLIAMS, inasmuch as he found that freshly prepared solutions of an oxy-pyridine were capable of curing pigeons affected with beri-beri, but, on the other hand, were ineffective after they had been allowed to stand for 5-6 days, or after cooking. (Fr. HOFMEISTER, Zur Kenntnis der alkaloidischen Bestandteile der Reiskleie, *Biochem. Ztschr.*, 103, 1920, 218.)

In the case of the other accessory food factors, chemical investigation has made still less progress. The substances examined by STEPP assume a peculiar position in that they fall into that group of substances, which cannot well be defined, termed the lipoids.

If we were to agree to dismiss from our minds the view that the classification into three factors hitherto established and accepted does represent a strict division from a chemical standpoint, then the question might perhaps again be raised as to whether such a division is in ordinary circumstances justified at all, and is not artificial when one allocates to certain foodstuffs in common use the possession of only one factor. That the division, however, rests on the secure foundation of experimental evidence is proved perhaps best in the example afforded by MELLANBY'S recent researches on the origin of rickets in young dogs.

MELLANBY fed young dogs and other animals upon a diet composed of skim-milk, white bread, linseed oil, salt, yeast, and orange juice. The food was quantitatively absolutely sufficient. The yeast and orange juice were added so that there would be no lack of the water-soluble B factor and the anti-scorbutic factor—factors which one knows are necessary for the promotion of growth. With this food, which was simply lacking in the fat-soluble A factor, typical symptoms of rickets were developed. The bones were imperfectly calcified; the legs were bent; the epiphyses of the bones were distinctly swollen; a chaplet developed on the costo-chondral symphyses; and the animals were lethargic and very awkward in their movements. X-ray exposure revealed the existence of rachitic bone changes. In brief, a diet which contains protein, fat, carbohydrate, salts, and the active principles of the yeast and orange juice is not capable of preventing rickets when lacking something which is present in milk fat.

Another question of high theoretical interest is that concerning the mode of action of the accessory food factors. Why are certain substances indispensible for growth and health?

The first answer to this question is that they are indispensable because the animal body is not capable of building them up itself; they are, as HOFMEISTER has expressed, of a strictly exogenous nature.

Much significance therefore attaches to the fact that only plants are in a position to build up these substances. The human and animal body possesses a store of the exogenous substances, and this store varies greatly in size according to circumstances. In many animals there is quite a large store of the substances, so that the body can draw upon them for a long time; in other animals, on the other hand, the store becomes rapidly exhausted. When it was proved that the accessory food factors are of a strictly exogenous nature, the same conception prevailed

with regard to them as did to some extent with respect to iron or calcium.

One is desirous, however, further to ascertain why beri-beri manifests itself when the husk and embryo of the rice are absent, and why rickets appears when certain well-known fats are not present in the diet. Two theories in explanation of these problems were already adduced at the commencement of the new era of vitamine knowledge. One of these held that the accessory factors were complementary substances that served either as antidotes to toxins or for nutrition. The other averred that they were essential in order to maintain the important vital functions at a certain rate of progress.

The first theory, namely, the theory of complementary substances, which held sway for a short period of time, implied that on an unbalanced diet of polished rice, for example, there was formed a poison or toxin, and that the antidotal substances needed to neutralise this poison were to be found in the husk and in the embryo of the rice. Experimental evidence of the existence of such a poison has never been brought forward, but, on the contrary, there is a good deal of experience which directly contra-indicates its formation.

According to ABDERHALDEN and CASPARI and MOSZKOWSKI, an unbalanced nutrition can give rise to disturbances of the intestinal functions and, in consequence, to the formation of toxic substances; thus, in this case also, the accessory factors would act in a certain sense as antidotes. The overwhelming majority of recorded observations does not range itself in harmony with this view.

The importance that should be constantly attached to the probable occurrence of local phenomena as a precaution in estimating the effects attributable to the absence of accessory factors is particularly well shown by the striking recent observations of THEILER. In South Africa there is a special disease of cattle characterised particularly by paralysis, and known as "lamziekte." THEILER himself originally, and FUNK in his well-known book, conceived the disease as an avitaminosis. By adopting certain cleverly-devised methods of observation, THEILER has recently thrown light on the genesis of this disease. During a period of drought, when the pasture plants show a relative deficiency in phosphorus, the cattle, in consequence, become addicted to eating bones; by eating these bones they become infected with bacteria, which elaborate a toxin, and this toxin sets up the severe train of symptoms.

If one rejects the toxin neutralisation theory, there still remains the view that the accessory factors act as complementary substances to a diet which is incomplete from a nutritional standpoint. In this manner they would be somewhat analogous in action, perhaps to tryptophane, when this substance is added to a diet deficient in it.

The functional theory, which is linked up in many ways with the last-named complementary theory, is founded upon the belief that certain substances which are not manufactured in the animal body itself are absolutely necessary to maintain control of the important body functions.

Recently, comprehensive researches which lend support to the functional theory have been executed by UHLMANN (Fr. UHLMANN, Beiträge zur Pharmacologie der Vitamine, *Ztschr. f. Biol.*, 68, 1918). This investigator showed, following upon observations made by DOLLBERG in BURGI's Institute, that a vitamine preparation named "orypan," made by the Society of Chemical Industry in Basle, exerted a powerful stimulating effect upon the salivary secretion. Further, he found that all the glandular secretions activated by the sympathetic nervous system, such as the gastric juice, pancreatic, intestinal, and bile secretions were stimulated by the action of the vitamines, and he localised the parts where the vitamines exerted their effects by using atropine to exclude the probable seats of influence. It was also found that the other organs of the body innervated by the sympathetic nervous system were stimulated by the action of "orypan," and UHLMANN subsequently found that even the glands which are concerned with the production of the so-called internal secretions are under the influence of the vitamines. These effects were also demonstrated with the use of preparations from which the last traces of choline had been eliminated. If one takes into consideration the extensive rôle played by the sympathetic nervous system in the processes occurring within the body, the functional importance of the vitamines as stimulants of this system cannot be overlooked. ABDERHALDEN and SCHAUMANN (*Pflüg. Arch.*, 172, 1918) likewise, as the result of an extensive series of experiments, emit the opinion that various complementary substances, the nutramines, are endowed with very considerable functional importance.

It is only by further chemical research that an explanation can be obtained upon the problem as to whether the phenomena that have now been indisputably proved to be associated with the sympathetic nervous system are provoked by the same substances as those which are allied with the manifestations of growth and disease-prevention, and which one ascribes to the fat-soluble factor A, the water-soluble factor B, and the anti-scorbutic factor. The most recent work of KARRER contains indications regarding the possible interference of very numerous derivatives from the most varied amino-acids of the choline type. Some of these substances might be able to assist the functional phenomena of the body, while others, which are contained in foodstuffs and in food extracts, might assist the principles of growth and maintenance, in the sense of complementary substances in a diet which is fully adequate for purposes of nutrition and growth. [ASHER (Leon), *Deutsche Med. Woch.*, 1921, May 5th, p. 510.]

J. T. E.

The Vitamin Content of Lard.

"The pig is able to store up supplies of vitamin A in the body fat when fed upon a diet containing ample supplies of that factor, as, for example, when grass-fed.

" When the diet of the pig is deficient in vitamin A, as, for example, when the diet consists almost entirely of toppings and whey, no appreciable amount of that dietary factor can be detected in the body fat.

" The processes employed in the manufacture of lard on a large scale in this country cause a very marked destruction of vitamin present in the pig fat.

" The low nutritive value of lard is therefore believed to be due to two causes. First, the diet usually given to fattening pigs in this country is seldom rich in vitamin A, so that the average sample of pig fat contains little or none of that substance; secondly, the processes of lard manufacture undoubtedly cause the destruction of much of the vitamin present in the original pig fat, probably owing to the exposure of the fat to oxygen at high temperature."

[DRUMMOND (J. C.), GOLDING (J.), ZILVA (S. S.), and COWARD (K. H.). The Nutritive Value of Lard. *Bioch. Jl.*, 1920, Dec., Vol. 14. No. 6, pp. 742-753.]

Notes on Mange and Allied Mites, for Veterinarians.

The parasitic skin diseases of all domesticated animals of this country so commonly met with in veterinary practice, and the economic effect of such diseases on the horse, necessarily make any treatise on such diseases of great interest to the veterinarian.

The above book, produced by Mr. Noel-Pillers, will be welcomed by those members of the profession who wish to make a close study of the mange, scab, and other similar parasites.

The book is written in six chapters, dealing principally with the parasites. The illustrations, numbering 60, are particularly good, and should prove helpful to students and others in distinguishing different species.

That portion of the book dealing with the treatment is very scant, but yet to the point. Much more might have been added on this subject. Those who know Mr. Noel-Pillers's writings will readily understand that he has given us a wealth of detail of the different parasites.

(MANGE AND ALLIED PARASITES, by A. W. Noel-Pillers, F.R.C.V.S., F.Z.S., Honorary Lecturer in Clinical Veterinary Parasitology, Liverpool School of Tropical Medicine; Member of the Board of Examiners for the Fellowship Diploma of the Royal College of Veterinary Surgeons. Bailliere, Tindall and Cox, 8 Henrietta Street, Covent Garden, W. 12s. 6d. net.)

Clinical and Case Reports.

The Editor will be glad to receive from members and others contributions to this column of reports of interesting cases.

Indurated Udders in Virgin Heifers.

By E. M. NIGHBERT (United States Veterinary Inspector, London).

In facilitating exportation of pure-bred cattle from Great Britain into the United States, on a recent visit to Scotland my attention was called to a disease affecting the udders of young heifers prior to breeding them. The condition was commonly referred to by breeders as " udder clap." I was informed by breeders that treatment was unsuccessful and that affected animals were consigned for slaughter.

History.—The disease was reported to be quite common, developing during dry and unusually warm summers, when cattle would bunch in the pastures and seek shade. It appears from the information gained that not more than one to four animals would be attacked during a season on the same farm. The disease always appeared in young unbred heifers or well-developed heifer calves. Also the disease developed so slowly that it often escaped notice until the animal began to lose flesh or failed to keep in good condition under the customary care that the herd was receiving. The disease was reported to have been seen in unbred ewes.

Symptoms.—The first symptoms noticed were that one and sometimes two teats would be prominently enlarged and hard to the touch, with acute local inflammation of one and sometimes two quarters of the udder. The disease would slowly progress until the affected parts would become greatly enlarged, giving the appearance of a developed udder in advanced pregnancy in an adult cow. The affected parts would be extremely hard to the touch, generally painless on palpation, except when abscess formation appeared superficially. The general appearance of the animal would show slight unthriftiness, appetite remaining good but development retarded. These are the symptoms described by the owner.

I asked if I might be shown a case, and was promptly taken to a local slaughtering establishment where two heifers between eighteen months and two years of age had been sent for slaughter. One of the animals was affected with the udder trouble and I had an opportunity to make a post-mortem.

Post-mortem appearance.—The carcass appeared normal and fairly fleshed. No enlargement or abnormal appearance of the body lymph glands. Abdominal and thoracic viscera normal, with no involvement of lymph glands. The udder was the only organ showing disease. One teat and quarter were involved, being greatly enlarged, reaching the dimensions of approximately 6 by 14 inches. On palpation the teat and quarter showed extreme induration. In cutting through the quarter a hard fibrous mass was displayed, with pus pockets intermixed, filled with a greenish-hued fœtid pus. The cut surface was smooth to the touch, and the parts affected displayed a progressive and prolonged interstitial inflammation.

Differentiation.—The macroscopic pathological appearance showed no calcified deposits nor enlarged lymph glands as are seen in tuberculosis. The pus was thin, greenish hued and fœtid, which would exclude actinomycosis. There was no appearance of local injury or point of infection. Therefore the condition indicated chronic garget commonly seen in aged dairy cows at the time of slaughter.

In my experience in practice, in the field and in post-mortem work in connection with United States

meat inspection, this condition in young heifers was not observed in the United States.—*Jnl. Am. Vet. Med. Assn.*

An Equine "Ancient."

By J. W. PRITCHARD, M.R.C.V.S., Brighton.

The subject of the photograph here submitted is my old grey horse, "Harkaway," aged 39 years. I purchased him at Aldridge's in November, 1906, he then being an old horse, his teeth having characteristics of 24 years of age. He has been ever since and is still doing my work regularly.

I believe this horse, in the early part of 1894, trotted from Westminster Bridge to the Aquarium, Brighton, in 4 hours 19 minutes.

Impaction by Toffee in a Cat.

By E. K. GATFIELD, R.V.C., London.

Subject.—Neuter cat, white, age 9 months. This was brought in by its owner one evening, who feared it was poisoned. The cat had been vomiting on and off all day, and had been given a dose of ol. ricini, which had not acted.

On manipulation of the abdomen I found the rectum and large bowel heavily impacted, and accordingly gave a gentle enema. This at first produced little relief, but on repetition the cat, after some effort, passed a lump of cocoanut toffee, about 1in. by ¾in., and a quantity of blue knitting wool.

The usual gastric sedatives were prescribed, and the cat made the usual uneventful recovery. I mentioned the case to Professor Symes, who opined the non-digestion of the toffee was due to its heavy fat content, and the state of comparative dryness of the cat's digestive tract, possibly due to the wool, which prevented the fat splitting enzymes acting on the fatty envelope surrounding the sugar molecules of the toffee.

Association Report.

Mid-West and South Wales Veterinary Association.

DISCUSSION ON WHOLE-TIME SALARIES.

The CHAIRMAN said they had all listened with very great interest to the paper which Professor Hobday, at the eleventh hour, had been good enough to prepare for them. He had touched upon some very interesting and technical points, so far as they were concerned, and Professor Hobday would go away all the better pleased if they discussed very fully all the points he had raised.

Mr. J. L. PERRY said he thought they would all agree with the remarks that had fallen from Professor Hobday's lips. They judged articles in a shop window by the price put upon them, and when the Board of Agriculture put the prices on the veterinary surgeon which they did, it was their own fault if they did not kick. He thought this organisation and the National were now well on their feet and time should prove the wisdom of Professor Hobday's words. He did not think that he had any suggestions to offer, or any fault to find with the paper at all, and he did not think many would.

Mr. F. C. HOBBS (Newport) said he would like to refer to just one point. Whenever he had advocated the appointment of full-time men, the difficulty he had to contend with was the ignorance of the councillors. The question they asked him was, "Have you an axe to grind?" and his reply was that whatever appointment they could offer for an inspector or any work which required to be done in the borough, it would not remunerate him to give up his practice, so they could dispense with that idea at once. The next question was, "Can we get a man?" His reply was that he believed they could. The universities were now granting a diploma in public health, and it was possible to get efficient men—far more efficient than the ordinary practitioner with regard to bacteriology, if not with regard to general practice. "What salary?" was the next question that was generally asked, and his reply was that he did not think they would get anyone of any value under £700. That seemed to collapse the whole affair altogether. He spoke as a ratepayer, and he contended that his meat should be inspected by a fully-qualified veterinary surgeon, and not by a person who was not a professional man. A large amount of meat that passed through what they called legitimate inspection was not fit for the food of man; it was awful. He wished to thank Professor Hobday for bringing the subject forward, because it gave them an opportunity of expounding their theories with regard to whole-time men. He had recently had a cheque from the Board of Agriculture. The amount given to him was £10, but his fees were £14, and £4 was deducted absolutely out of his earnings, the result being it was not labourer's wages. If the Government were able to do these things, how could they expect such people as borough councils, who knew nothing about it, to help the profession. He suggested they should have some form of propaganda to educate the councillors and tell them that men were available to fill the positions. They were told they had no one to place in a position equal to a medical officer; but that was entirely wrong. (Hear, hear.) He thanked Professor Hobday for his paper, which he had enjoyed very much.

Mr. STEWART (Cardiff) said personally he considered—and had always thought so—that the remedy was more or less in their own hands. They had a good organisation, which was comparatively strong, and as it went on it would become stronger. Let them be loyal to themselves and boycott those positions that were advertised unless they were sufficiently remunerated.

Mr. PORCH said the paper had given them much food for thought, especially as the younger generation were coming on. Although the profession to-day was not what it was years ago, it was no use pulling wool over their eyes and thinking it was going to be better, because he did not think it was. They knew that there were positions opening up for younger men, but, as Mr. Hobday said, unless those men were to receive an adequate salary which they could exist on in a professional manner, it seemed to him to be a very poor outlook for them in the future. No doubt the veterinary profession were turning out considerably more graduates than were absolutely required. He might be wrong, but what made him mention that subject was this. They would remember some time ago when the Royal College asked for certain information they mentioned the number of students as 680, and if 680 duly-qualified men came into the profession in the next four or five years, it would be a very poor outlook for the old ones. What they had in view he did not know. They might do more than he could.

The profession was a young one, although it had been in existence a number of years, and now was their time. If they were to make a stand, they should make that stand now in the transition stage of the profession with the local authorities. Probably the local authorities would not fall in with their views unless they were compelled to, but the time would come when the local authorites of large cities would have to appoint whole-time veterinary surgeons, and he thought now was the time to make a stand, and insist that these men should be paid an adequate salary. He was sorry to say in many cases their own profession had something to do with the remuneration. There were men in authority who were leading the way. They found very often men who were at the head of a department, whether it were the Board of Agriculture or an Army Department, who liked to make their department look as if it was working economically, and that applied especially to the Army Veterinary Department. They, during the war, had veterinary surgeons like himself, too old to go to the front, but he did his best. He examined in three years, how many horses he did not know, but sufficient for 10,000 to be purchased. He examined 100 a day, for which he received the princely remuneration of a guinea. They might ask why he did it. He would tell them why he did it. He commenced it when they had two guineas, but he had a real good sporting man with him, to whom he said many times, "I am going to chuck this job." His colleague replied, "You are doing your bit, old chap, and I am doing mine. You started; let us finish." That was why he kept on, but for any department to expect a professional man to take the responsibility of spending tens of thousands of the taxpayers' money for a guinea was disgraceful. He thought that if the head of the Army Veterinary Department had represented the case differently, the men who did that work would have been remunerated more in accordance with the work they did.

(To be continued).

Notes and News

Captain Chown's Gallant End.

STORY OF THE NYALA ATTACK.

The following is an official report of the attack on Nyala, in which Captain Chown lost his life. Nyala is about 520 miles from the railhead, El-Obeid, over some very bad sandy desert country.

In anticipation of the attack the Merkaz* buildings had been converted into a fort with barbed wire fence. At about 8-30 a.m. enemy with nine flags numbering about five thousand advanced in solid phalanx from south; seven flags attacked the Merkaz on south side and one attacked it from the west, while the remaining flag accompanied by horsemen attacked the town and Suk† which lie to east of Merkaz. By sheer force of numbers and despite heavy casualties inflicted on them by rifle fire of troops and police they forced a way into Merkaz Square, the defenders being driven. Chown emptied his revolver and then seized a rifle which jambed. He was then surrounded and died fighting gallantly inside the Square. McNeill rallied the retreating troops and police, and made a gallant stand, but he and they were forced slowly backward through the fort and he died one hundred and fifty yards to north of it pierced by four spears. The rebels were now in possession of the fort and set fire to one of the Merkaz buildings. Yuzbashi‡ Bilal Rizk and Muawin§ Hassan Mohammed Zein collected a post of mounted infantry which had been placed in a zariba outside fort to east to protect Suk, and returning with them to fort took enemy in rear and drove him out in confusion. Troops and police who had been retreating then rallied and returned to fort. Rebels attacked again under leadership of Abdullahi himself and advanced to within thirty yards of fort, where he was hit and fell from his horse. He was carried off by his followers. Mounted Arab friendlies stationed on wings then dashed in and scattered remainder of rebels, who fled, being pursued and cut up. The gallant stand made by a mere handful of troops and police against overwhelming odds was, I considered largely due to the magnificent example of bravery set by McNeil and Chown. After their deaths what would have been a great disaster was averted and the position retrieved by the pluck and resource of the two native officers mentioned above.

* Merkas = Government. † Suk = Market. ‡ Yuzbashi = Captain.

§ Muawin = Head messenger.

Tropical Disease Prevention Association.

Major-General Sir John Moore, writing in a recent number of *Country Life* relative to tropical disease prevention, says:—

"It is hopeful to note that an association under the title of 'Tropical Disease Prevention Association' has taken the matter in hand and is in course of incorporation under the Companies Act. Her Royal Highness the Princess Royal is patron of the Association, and His Royal Highness the Prince of Wales has signified his interest. Lord Milner has expressed his entire sympathy with the aims of the Association and will be a vice-president.

"The Association desires to send out to Uganda an auxiliary Commission of medical and veterinary specialists to carry out necessary research, to apply special treatment to persons affected with sleeping sickness and to further investigation in other directions. Recently Dr. C. H. Marshall and Dr. S. M. Vassallo, both of the Uganda Medical Service, have worked out and applied a new form of serum treatment which up to now is claimed to have given a percentage of recoveries in man far higher than any other method. It is expedient that this method should be pursued, perfected or modified in the light of subsequent investigation and experience, and that there should arise from it an easy and practical method of immunisation. What is applicable to human beings is equally applicable to animals, and the Commission is wise and fortunate in securing the assistance and co-operation of veterinary experts.

"The Colonial Office has promised administrative support to a scheme of Dr. Marshall's submitted by the Association, but there are neither public funds nor sufficient official staff available for the purpose of extensive research and application of the method to a large number of cases in the affected area. It is estimated that a sum of £50,000 will be required to carry out the scheme, which will cover a period of three to four years, and, although it is realised that the present times are difficult for private

financial aid, an appeal for funds is being made. Subscriptions will be gladly welcomed by the Hon. Treasurer, Tropical Disease Prevention Association, 71 Harley Street, London, W.1. It is hoped to be able to arrange for the Commission to start within the next few months under the leadership of Professor J. W. H. Eyre, M.D., F.R.S.E. (Professor of Bacteriology in the London University and Director of the Bacteriological Department of Guy's Hospital), who in 1906 was Chairman of the working party of the Malta Fever Commission. Success will mean the removal of a standing menace to Europeans and natives living in Africa as well as to domestic animals."

Farriers and their Duties.

IMPORTANT LANCASHIRE TEST CASE.

A test action to decide whether a farrier is obliged to undertake the shoeing of a horse was heard at Bolton County Court, recently. Albert Edward Q. Howarth, team owner, claimed £10 damages from Thomas Abram, farrier and blacksmith, in consequence of the latter's refusal to shoe a horse tendered to him in the ordinary way of business.

The facts, which were not in dispute, were that plaintiff was formerly a member of the Bolton Teamowners' Association, and defendant is a member of the National Master Farriers' and Blacksmiths' Association, the latter being registered as a trade union. Between the two bodies there exists an agreement for the mutual protection of trade interests. Under this agreement, if a member is expelled from the Teamowners' Association his name is forwarded to the Farriers' Association, the members of which are prohibited, under penalty of a fine, from undertaking the shoeing of his horses. Plaintiff was expelled last year, and it was in consequence of this that the defendant refused to do any work for him.

Mr. Jordan, for the plaintiff, submitted that, according to law and the accepted text-book rendering of it, a farrier, by reason of the ancient and public-service nature of his calling, came within the same category as the innkeeper and the carrier. Just as an innkeeper was bound to provide reasonable accommodation and refreshment for the wayfarer, and the carrier was bound to transport goods offered to him, so was the farrier compelled to perform the shoeing of horses tendered to him. The principle, he said, was laid down in the reign of Henry VI., and had since been accepted by the text-books and legal authorities.

Dr. Eastham called no evidence for the defence, and contented himself with the submission that there was nothing obligatory in the duties of a farrier. He had investigated the case referred to as having been decided in the time of Henry VI., and was satisfied that there was no such principle laid down as the one suggested. If, since, the text-books had accepted the principle, the text-books were wrong.

His Honour, giving judgment, said that Mr. Jordan had argued that in old times and now the position of a farrier was akin to that of a carrier or innkeeper, inasmuch as transport by horses was a necessity, and it was the duty *inter-alia* of farriers to assist transport in the only way they could. Many ancient authorities had been cited, but they were all in the nature of obiter dicta of learned judges, and although some of them referred to other cases to support their views, he himself did not find that the cases cited decided the point at issue. No case had been cited before him which was directly in favour of the proposition put forward by Mr. Jordan, and he therefore found that he had failed to prove his case. There would, therefore, be judgment for the defendant, with leave to appeal if necessary, as the case was one of public importance.—*Farmer and Stockbreeder*, and *Bolton Evening News*.

FOOT-AND-MOUTH NEWS.

The foot-and-mouth disease outbreak near Tonbridge having been confined to one case only, the restrictions imposed on the neighbourhood, excepting a limited area, were removed, thus permitting the Christmas fat shows to be held at Edenbridge, Maidstone, and Ashford.

Owing to reports of cases of foot-and-mouth disease in various European countries, Switzerland has prohibited the importation of cattle and meat from all countries except Denmark, North America and the Argentine.

Correspondence.

Letters to the Editor should reach the Office not later than by the first post on Tuesday morning for insertion in following Saturday's issue.

All correspondence must bear the name and address of the contributor for publication.

The Editor does not hold himself responsible for the opinions of his correspondents.

Equine Piroplasmosis.

Sir,—The report in the *Veterinary Record* of November 26th of the paper on "Bovine Piroplasmosis," and the subsequent discussion at the Western Counties V.M.A., is so interesting that I am tempted to join in the discussion, not because I know anything of red-water in cattle, but on account of my experience of equine piroplasmosis—biliary fever.

Is the disease latent in many cases?—In Mesopotamia we concluded that every horse which had been through a tick season had piroplasmosis latent. We conceived the idea owing to the fact of two horses and two small mules—the latter class was rarely affected—showing acute symptoms of the disease four days after severe surgical operations, whereas the incubation period is given as 12-21 days. All these animals were, previous to their operations, otherwise in excellent health, had been in the country some considerable time and so were not at all likely subjects.

Transmitting agents other than ticks.—One of our patients not long in the country and admitted to hospital before the tick season commenced developed biliary fever. We had every reason to believe that he had never received the unwelcome attention of ticks, and that the disease was transmitted by biting flies from recent cases admitted for treatment. This is the belief of men of far greater

experience, as there were strict orders to isolate all such cases.

Treatment.—While in India, in 1918, orders were received to intravenously inject biliary patients with antimony tartrate, but the treatment was disappointing. However, the drug in saline solution per stomach tube was given a trial with most gratifying results. The icteric symptoms disappeared in about three days, closely followed by the petechiæ, and convalescence was soon established. In a few weeks all the patients were in excellent health and condition, whereas we were informed that death in the acute stage and, where the animal survived, debility of long duration were common sequels.

The same treatment was also very successful in another parasitic disease, viz., Bursattæ.

Saline nullifies the actions of linseed oil and aloes if administered at the same time in a 2½% solution—Sod. chlor. mgs. aqua gal ii. Is it not possible that decomposition of antimony tartrate, too, is more or less prevented, and that a larger percentage is absorbed unaltered into the blood stream with a consequently more prolonged bathing of the red blood corpuscles ?

Thirst.—The writer has had some difficulty in explaining this action of sod. chlor., but is now of the opinion that it is due to gastric acidity, as the addition of soda bicarb. to the saline appears to obviate excessive thirst. There are, however, cases now and again in which the patient is disinclined to drink as the result of the treatment.

Dilution of sod. chlor.—In both the horse and the cow we find that to get the best results the drug must be highly diluted. Given with food or with lard in the case of bovines it would seem that it is chemically decomposed as the result of digestion, and thus rendered inert. There need be no surprise at the statement that gastro-enteritis and death sometimes follow when the concentrated drug is used in cattle; in the horse a 5% solution is highly dangerous.

Vomition during administration per tube in cattle.—To avoid this—I am indebted to Mr. E. F. Angler for the information—one should not insert the tube into the rumen. It is interesting to note that Mr. McSwiney adopts the converse to excite vomition (*Veterinary Record*, November 26th), and his hint to lower the head is fully appreciated, as during experimental saline treatment in bullocks in India I arrived one morning to find one dead, owing to failure to adopt this precaution.—Yours, etc.,
W. W. Lang.

Brigg, Lincs., December 7th, 1921.

Army Veterinary Service.

London Gazette. War Office. Regular Forces.

The following relinquish their commissions, on completion of service:—Temporary Capt. W. P. Stokes (September 1st), and retains rank of Capt.; Temporary Lieut. J. M. Walker, F.R.C.V.S. (April 7th, 1919), and retains rank of Lieut.

December 8th.—The following temporary Captains relinquish their commissions on completion of service:—J. N. Glass (July 31st) 1919, and is granted the rank of Major. And retain the rank of Captain:—A. J. Barbeta (July 8th, 1919); W. W. Kerr (March 28th, 1919); E. J. Phair (April 22nd, 1919); R. N. M. Williams (December 18th, 1919).

Territorial Force.

6th December.—Capt. W. D. Jordan relinquishes commission (September 30th), retaining rank.

Diseases of Animals Acts, 1894 to 1914. Summary of Returns.

Period.	Rabies. Cases Confirmed. Dogs.	Rabies. Cases Confirmed. Other Animals.	Anthrax. Outbreaks confirmed.	Anthrax. Animals attacked.	Foot-and-Mouth Disease. Outbreaks confirmed.	Foot-and-Mouth Disease. Animals slaughtered as diseased or exposed to infection.	Glanders (including Farcy).* Outbreaks reported by the Local Authorities.	Glanders (including Farcy).* Animals attacked.	Parasitic Mange. Outbreaks reported by the Local Authorities.	Parasitic Mange. Animals attacked.	Sheep Scab. Outbreaks reported by the Local Authorities.	Swine Fever. Outbreaks confirmed.	Swine Fever. Swine slaughtered as diseased or exposed to infection.
GT. BRITAIN.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.
Week ended 3rd December, 1921	..	...	14	19	...	110	.	1	20	23	24	26	10
Corresponding Week in 1920	...	...	15	16	1	369	1	2	49	62	18	23	7
Corresponding Week in 1919	...	...	5	8	...	...	...	..	77	164	29	41	5
Corresponding Week in 1918	3	...	9	10	...	...	...	1	110	216	13	25	5
Total for 49 weeks, 1921 ...	22	1	466	593	44	3085	11	42	1942	2934	535	1178	435
Corresponding period in 1920	34	...	417	495	80	10798	15	25	3422	5598	420	1743	695
Corresponding period in 1919	148	5	217	287	70	3066	22	58	4648	9172	350	2200	1001
Corresponding period in 1918	86	3	232	269	3	40	31	93	4121	7671	317	1325	531

Note.—The figures for the current year are approximate only. *Excluding outbreaks in Army horses.

IRELAND. Week ended 3rd December, 1921	...	...	...	...	...	...	Outbreaks ...	9	...	23
Corresponding Week in 1920 ...	...	...	...	...	...	...	2	3	1	3
Corresponding Week in 1919 ...	...	...	...	...	...	...	1	10	1	...
Corresponding Week in 1918 ...	...	...	...	..	..	..	..	14	1	...
Total for 49 weeks, 1921	1	1	7	77	...	...	74	258	111	130
Corresponding period in 1920 ...	1	1	...	...	1	3	92	317	14	41
Corresponding period in 1919 ...	...	..	...	...	1	1	136	266	32	96
Corresponding period in 1918 ...	2	2	..	..	.	.	95	310	29	129

Note.—The figures for the current year are approximate only.

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General Manager and Secretary:

E. R. PICKERING.

The Directors have pleasure in announcing that, on behalf of the Company, they have acquired the whole of the Share Capital of the

SHROPSHIRE LIVE STOCK UNDERWRITERS' ASSOCIATION LIMITED.

The Association will continue to function under its registered title, but will in future have the benefit of increased security to offer to its Policy-holders, and the expert advice and assistance of the Officials of The Veterinary Insurance Co., Ltd., whose General Manager, Mr. E. R. Pickering, joins the new Board of the Association as its Managing Director.

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